Vibrating Equipment Technical Center

As a leading manufacturer of vibrating machinery, SINFONIA TECHNOLOGY has considerable experience and vast technical resources in this field.
The Vibrating Equipment Technical Center is equipped with the most advanced facilities to provide for all customer's needs relating to vibrating equipment and particulate materials.
The first floor houses the latest measuring and testing equipment, and various types of vibrating equipment of all sizes.
We are ready at any time to undertake basic tests on materials, and carry out precision testing with material samples,
or performance and assessment testing,
using any type of vibrating equipment.

The Technical Center is always ready to respond to customer's inquires with a team of skilled research and technical staff and a range of advanced equipment.

- Analysis of characteristics of particulate material
- Testing of processing equipment
- The development of new technology/ new applications/new products

Please feel free to consult us.

For safe and reliable operation, it is essential to read the user's manual carefully before using this equipment.

SINFONIA TECHNOLOGY CO., LTD. declares slogan named "ECOing" in Japan, which is a made up word by combining "eco" and "ing",
in order to promote eco-friendly technological development and manufacturing. Our ecological activities are not remain only within Japan but practiced in many countries.

Formerly SHINKO ELECTRIC CO., LTD.

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CODE E90-103

Content of this catalogue may change due to product improvement without notice.
URL http://www.sinfo-t.jp/eng

Printed in Japan 1209AII Ⓢ

Small Vibrating Equipment

CF Series Small-sized Feeders 1
Water-resistant Vibrating Feeder WCF-2 3
LF Series Linear Feeders 4
Vibrators 5
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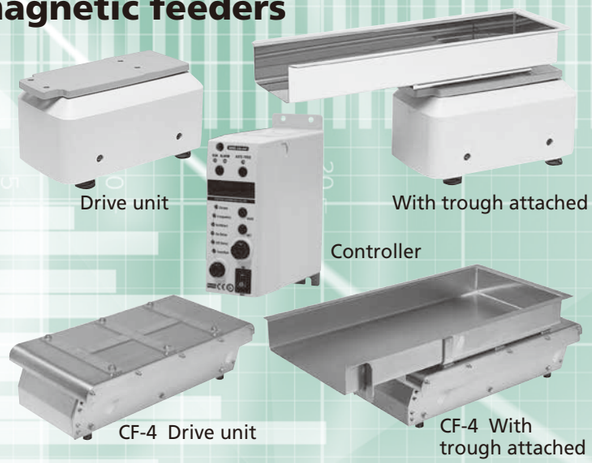
RV Series Vibrating Motors 12
RVX1 Series Vibrating Motors 25
Flow Control Valves 27
Adaptor Sleeve/ Adaptor Spool 29

SINFONIA
SINFONIA TECHNOLOGY CO., LTD.
Formerly SHINKO ELECTRIC CO., LTD.

CF Series Small-sized Feeders

Easy to use new electromagnetic feeders

Based on tried-and-tested technology, these small electromagnetic feeders for the supply/discharge of particulate materials are now much easier to use. The addition of a variable frequency controller, supplied as standard, eliminates the need for delicate leaf spring adjustments.
Tuning is simple and requires no experience.
These new models also feature increased delivery capacity, and outstanding durability.
Ideal for supply, small-volume precision supply, and discharge of superfine powders and all other particulate materials.



Features

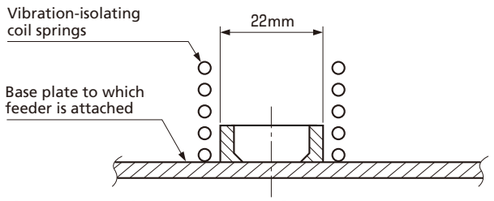
- Variable frequency controller, supplied as standard, delivers variable output frequency unrelated to frequency of power source.
- Requires no leaf spring adjustment, and no experience, for perfect tuning.
- Set voltage function keeps amplitude constant, regardless of power source voltage fluctuations.
- High vibration amplitude of max. 1.6 mm boosts delivery capacity by 30% over former models.
- Drive unit sealed in durable plastic casing (CF-1～3) and SUS(CF-4) that keeps out dust and powder, to extend working life.
- A wide range of trough designs can be accommodated, to suit user requirements.
- With the addition of an optional standard amplitude controller, amplitude can be kept constant through changing loading conditions (except CF-4).

Calculating conveying capacity for individual materials, using standard flat-bottomed, open trough (see graphs below)

$$\text{Capacity } Q = \frac{\text{standard conveying capacity}}{1.6} \times \gamma \times C_1 \times C_2 \text{(T/Hr)}$$

γ is bulk density of material
C_1 is coefficient derived from fineness
C_2 is coefficient derived from moisture content
This formula cannot be applied to materials with very high levels of adhesion, that flush easily, or with bulk density of 2.0 or higher.

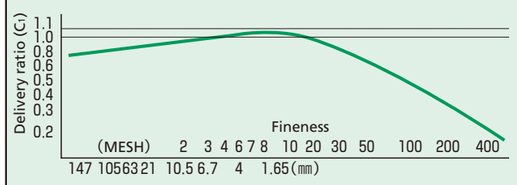
Positioning vibration-isolating springs (for models CF-1, CF-2, CF-3, CF-4)



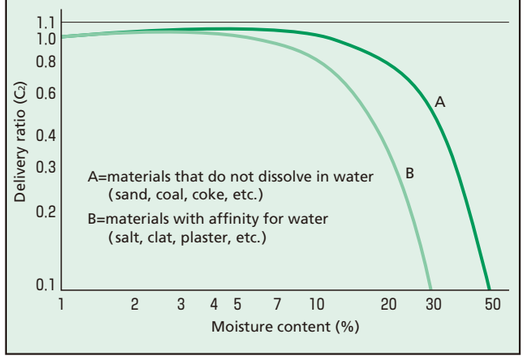
Vibration-isolating spring dimensions:
(Av. diameter/wire diameter×height mm) Unit：mm

CF-1	CF-2	CF-3	CF-4
φ28/φ3.2×27	φ28/φ3.4×34	φ28/φ4.0×34	φ28/φ4.0×34

①Fineness-delivery ratio



②Moisture content-delivery ratio



Standard Drive Unit Specifications

Models	Voltage (V)	Current (A)	Frequency (Hz)	Weight (kg)	Recommended trough weight (kg)	Max.trough length (mm)	Applicable controller
CF-1	100/110	1	50～70	7	0.7～2.0	500	C10-1VCF
	200/220	0.5					
CF-2	100/110	1	50～70	13	2.0～4.5	700	
	200/220	0.5					
CF-3	200/220	1	50～70	21	3.0～9.0	800	
CF-4	200/220	3	45～60	90	10.0～20.0	950	C10-3VF

Note: 1. Plastic casing colors(CF-1～3) : fixed unit : light gray(UN-75) ; movable unit : blue violet (DIC2409) 2. CF-4 : Main body cover : SUS304
3. Cable : CF-1～3 : VCT, 2-core, 0.75mm², length 0.5m. 4. Only specified variable frequency controller can be used.

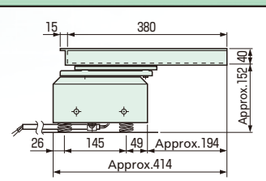
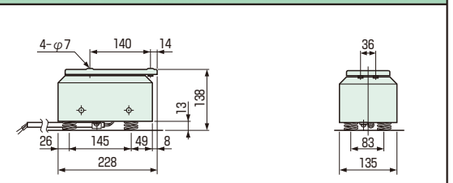
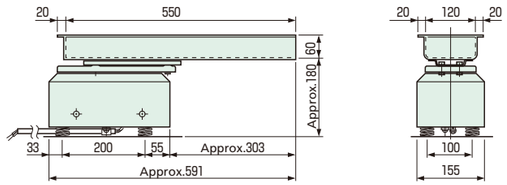
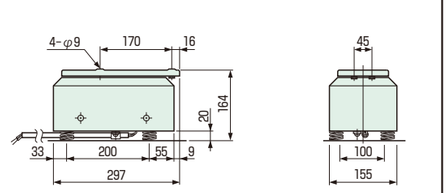
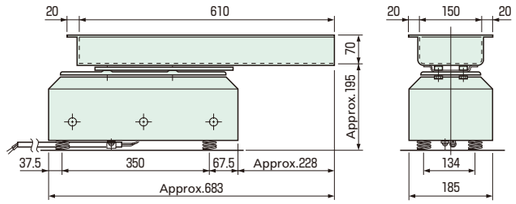
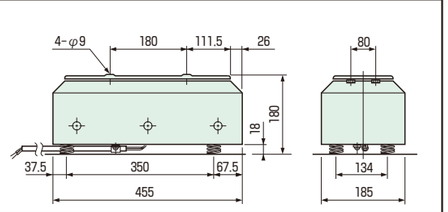
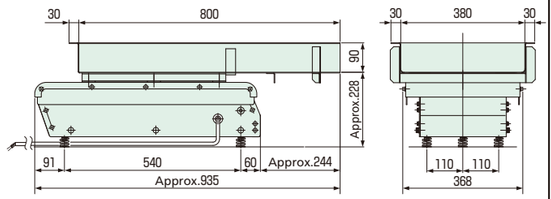
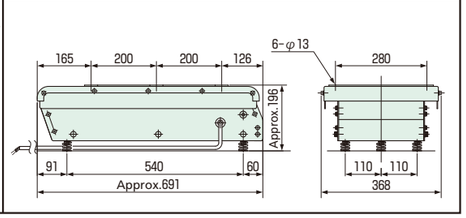
Standard Specifications with Trough

Models	Standard conveying capacity(sand γ :1.6) Trough dimensions (w x l x h;mm) (standard flat-bottomed, open)	Capacity (T/Hr)	Voltage (V)	Current (A)	Frequency (Hz)	Trough weight (SS/SUS)	Applicable controller
CF-1	100×380×40	2	100/200	1/0.5	Approx.65	1.4/1.2	C10-1VCF
CF-2	120×550×60	5	100/200	1/0.5	Approx.65	2.5/2.2	
CF-3	150×610×70	8	200	1.0	Approx.65	3.6/3.2	
CF-4	380×800×90	25	200	3.0	Approx.55	—/13.6	C10-3VF

Note: 1. Standard conveying capacity is for standard sand(1.6 apparent density ; 1% moisture content ; 20 mesh grain size)
2. Use optional voltage converter unit C10-TR, in order to use CF-3 at 100V.
3. Controllers other than the specified models (variable frequency types) are not operative.
4. Prices for trough, drive unit, and controller are separately quoted.
5. Trough and drive unit are packed separately.
6. Optional troughs made in SS and SUS are available.

Dimensions

Unit：mm

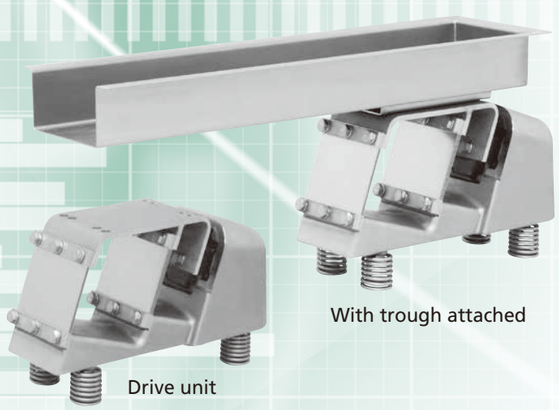
	Flat-bottomed,Open,Standard Feeder	Drive Unit
CF-1		
CF-2		
CF-3		
CF-4		

Water-resistant Vibrating Feeder WCF-2

Washable compact feeder that realize hygienic manufacturing environment

Patent pending

Compact electro-magnetic feeder with washable trough and drive unit: electric parts such as electro-magnetic coils are stored in fixed frame made of stainless steel and are protected from water. Simple design without cover or coating for easy cleaning: the design eliminates foreign materials, coating flakes, or contaminations. Component parts are made of stainless steel (with some exceptions of galvanized stainless steel), which is detectable by metal detector. The feeder is quite suitable for hygienic environment such as in food and pharmaceutical production; you may simply wash out residue such as allergen materials.



With trough attached

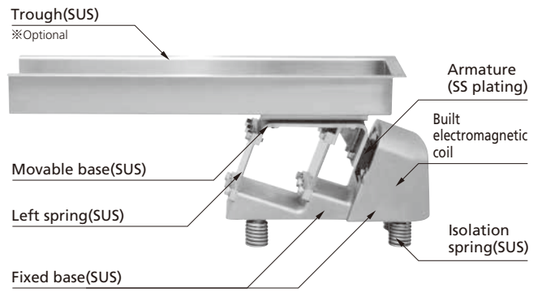
Drive unit

Specifications

Model	WCF-2
Cover	No cover
Standard trough size(mm)	120×550×60
Max stroke(mm)	1.6
Vibration frequency(Hz)	50～70
Voltage(V)	200*
Current(A)	0.5
Trough weight(kg)	2～4.5
Weight(kg)	16.5
Applicable controller	C10-1VCF*

Note: *C10-TR power transformer unit is required when power source is AC100V

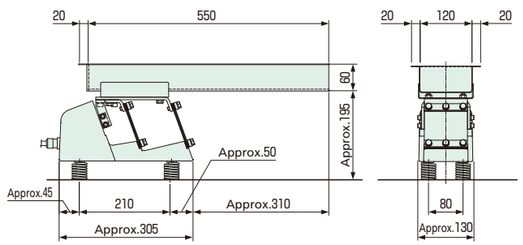
Structural Diagram



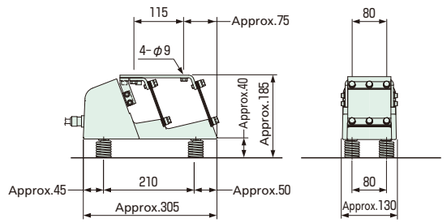
Dimensions

Unit：mm

Flat-bottomed,Open,Standard Feeder



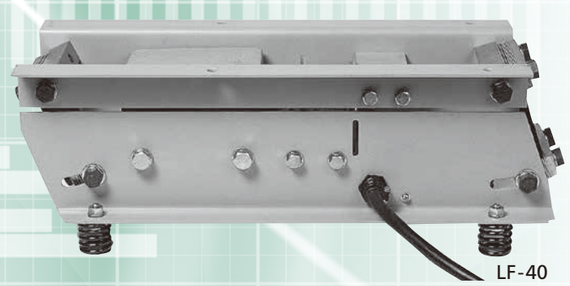
Drive Unit



LF Series Linear Feeders

Direct conveyance of fine powders

Linear feeders are electromagnetic drive units that steadily and convey materials through troughs or chutes. The troughs or chutes are vibrated directly by leaf springs attached to both ends of the drive units that work in combination with an electromagnet. Because the leaf spring's attachment angle can be adjusted, the vibration characteristics can be freely modified and uniform vibration can be achieved throughout the entire length of the trough.
This flexibility permits the operator to maximize efficiency by selecting the type of vibration that best suits the material being delivered.
The LF and MF Series linear feeders can supply and discharge a wide range of fine powders, microparts and precision components. When linked in series, they can also handle long-distance transport. Please note that all chutes are made by special order to customer specifications.



LF-40

Specifications

Model	Voltage (V)	Frequency (Hz)	Vibrations (VPM)	Current (A)	Weight (kg)	Applicable controller
LF30	200/220	50/60	3000/3600	1.5	25	CC4-5B C10-3VF
LF40	200/220	50/60	3000/3600	1.6	33	CC4-5B C10-3VF

Note: The standard paint color is Munsell 2.5G7/2.

Trough

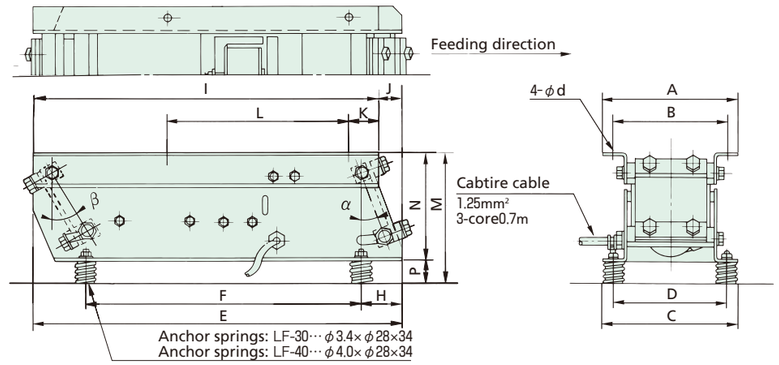
Appropriate linear feeder	Maximum length (mm)	Maximum width (mm)	Maximum Weight (kg)
LF30	650	200	6
LF40	750	300	8

Note: Figures for LF-30 and LF-40 are for a vibration amplitude of 1.0mm. Please make your selection on the basis of weight.

Dimensions

Unit：mm

LF-30/40



●Dimensions Table

Model	A	B	C	C'	D	E	F	G	H	I	J	K	L	M	N	O	P	d	Leaf-spring adjustment angle α	Leaf-spring adjustment angle β
LF30	182.4	156.4	180.4	—	150.4	410	295	—	55	380	30	40	190	162	132	—	30	9	0°～20°	10°～30°
LF40	196.4	166.4	186.4	—	154.4	500	375	—	55	470	30	40	250	177	147	—	30	9	0°～20°	10°～30°

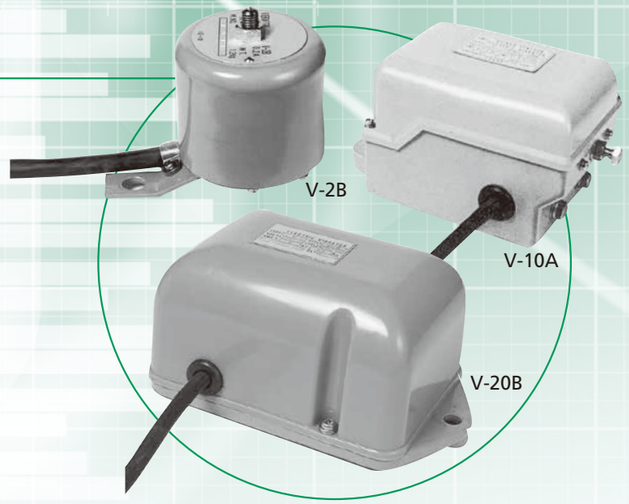
Vibrators

The simple way to prevent material from getting blocked or stuck

Simply attach these high-performance vibrators to hoppers, bins, or chutes to ensure that the material inside is delivered smoothly, without arching or getting blocked. Many models of two different structural types are available to precisely match operating conditions and the material being handled. SINFONIA TECHNOLOGY CO., LTD. also offers vibratory packers that are ideal for canning and bottling operations.

V Series Vibrators

An alternating, half-wave, pulsating current generates collisional electromagnetic oscillations which, in combination with the resonance of a leaf spring, produce powerful and effective vibrations. Appropriate for small to medium-sized hoppers, the V Series vibrators offer outstanding reliability and durability because they have no parts that are subject to wear. The V-20B and V-30C feature SINFONIA TECHNOLOGY CO., LTD.'s exclusive E-type moving core and CFRP leaf spring that combine the advantages of a compact size with strong vibrations. The V Series vibrators can be used in temperatures ranging from 60℃ to -15℃.



VG Series Rubber-Spring Vibrators

The VG Series vibrators have a highly resilient rubber spring, used in combination with a moving cast-metal core that is electromagnetically vibrated by means of an alternating, half-wave, pulsating current. Designed for medium-capacity hoppers, these compact, light-weight units are easy to install and highly energy-efficient, making them economical to operate. The durable rubber spring can easily withstand temperatures ranging from 60℃ to -15℃.

VP Series Vibratory Packers

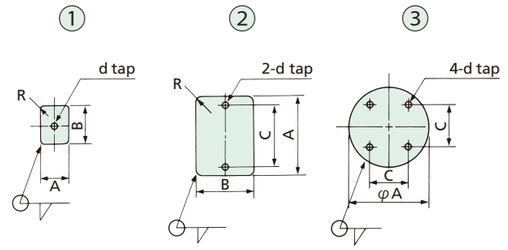
The VP Series vibratory packers are spring-mounted, table-top units that use vibration to quickly fill cans, bottles, and other containers with medicines, chemicals, and many other kinds of powdered materials. Efficient and reliable, they speed up the packing process and help to ensure that all containers are uniformly filled.

Guidelines for Vibrator Applications

Sheet thickness of hopper/chute (mm)		Hopper capacity (ton)	Vibrator model			
			V Series	VG Series	RV Series	
Standard	Maximum				2P	4P
0.6	0.8	0.02	V-2B	—	—	—
0.8	1.0	0.04	V-4C	—	—	—
1.0	1.6	0.1	V-10A	—	RV-042	—
1.6	3.2	0.35	V-20B	—	RV-072D	—
3.2	4.5	1	V-30C	—	RV-12E	RV-064
4.5	6	3	—	VG-60	RV-22D	RV-14D$_1$
6	9	20	—	VG-80	RV-42E	RV-24D$_1$
9	12	50	—	—	RV-72E	RV-44D$_1$
12	19	100	—	—	—	RV-74D$_1$
19	25	150	—	—	—	RV-154B$_3$

Note: Please make you selection on the basis of sheet thickness.

Outer Dimensions of Attachment Base Unit : mm

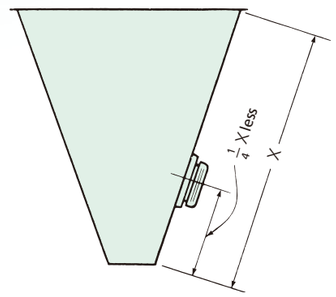


●Reference Chart of Base Dimensions

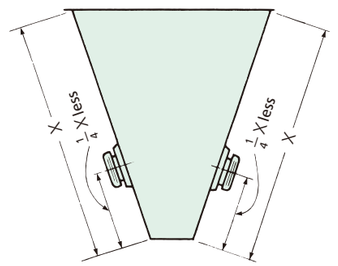
Models	Diagram number	Sheet thickness of base	A	B	C	R	d
V-2B	①	14	20	30	—	5	M10
V-4C	①	16	38	58	—	10	M12
V-10A	①	16	65	80	—	10	M12
V-20B	②	16	250	150	220	35	M10
V-30C	②	16	350	200	310	45	M12
VG-60	③	16	300	—	160	—	M12
VG-80	③	22	350	—	195	—	M16

Installation Examples

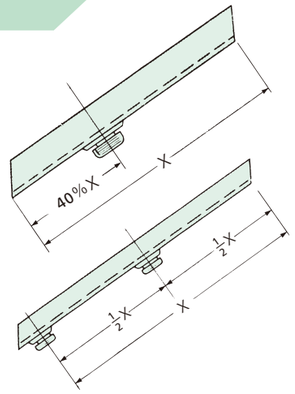
Angled hopper



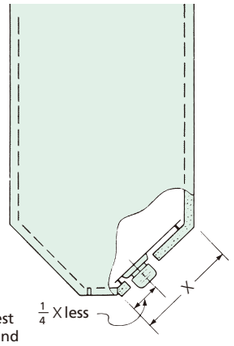
Conical hopper



Chote

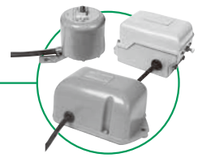


Hopper with vibrating board



X=the range within the best attachment position is found

V Series Vibrators



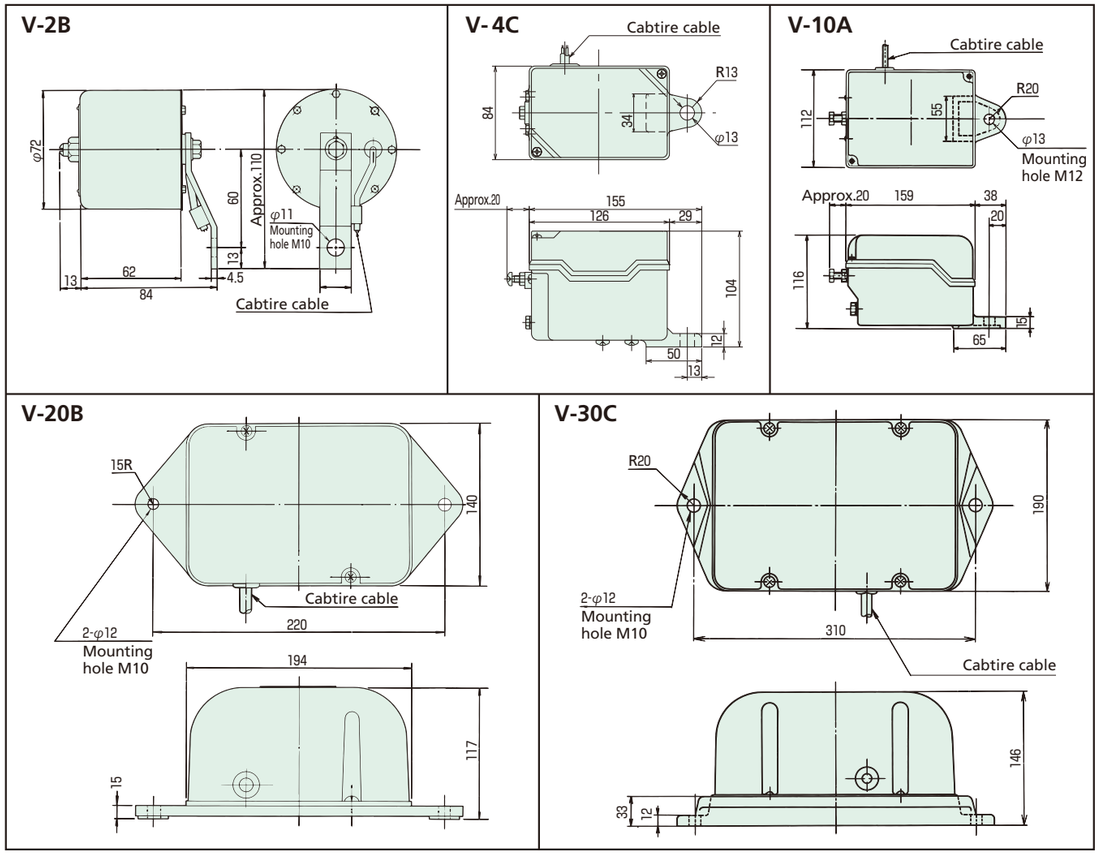
Specifications

Models	Voltage (V)	Frequency (Hz)	Vibrations (VPM)	Impact force (kg)	Current (A)	Voltage×current (VA)	Weight (kg)	Applicable controller
V-2B	100	50	6000	4	0.2 (for100V)	20	1.2	C4-5B
	110	60	7200					
V-4C	100	50	6000	10	0.4 (for200V)	80	1.9	C4-5B
	110	60	7200					
	200	50	6000					
	220	60	7200					
V-10A	100	50	6000	28	0.75 (for200V)	150	3.7	C4-5B
	110	60	7200					
	200	50	6000					
	220	60	7200					
V-20B	100/110	50/60	3000/3600	60	1 (for200V)	200	6.5	C4-5B
	200/220	50/60	3000/3600					
V-30C	200	50	3000	180	2.5 (for200V)	500	17	C4-5B
	220	60	3600					

Note: 1. Standard color: Munsell 2.5G7/2
(V-4C,V-10A,V-20B have synthetic resin covers painted Munsell N-6).
2. Insulation class:A
3. Cable: V-2B/VCT, 2-core, 0.75mm^2(O.D.9.8mm), length0.5m.
V-4C–V-20B/VCT, 2-core, 0.75mm^2(O.D.9.8mm), length0.5m.
V-30C/VCT, 2CT, 2-core, 1.25mm^2(O.D.10.6mm), length0.5m.
4. Models V-2B, V-4C, and V-10A can be operated without controllers.

Dimensions

Unit：mm



VG Series Rubber-Spring Vibrators

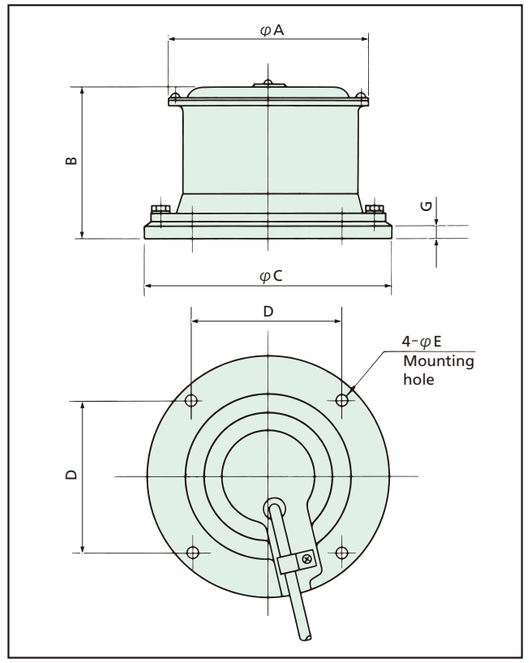
Specifications

Models	Voltage (V)	Frequency (Hz)	Vibrations (VPM)	Impact force (kg)	Current (A)	Voltage×current (VA)	Weight (kg)	Applicable controller
VG-60	200	50	3000	300	1.8	360	20	C4-5B
	220	60	3600					
VG-80	200	50	3000	600	3	600	35	C4-5B
	220	60	3600					

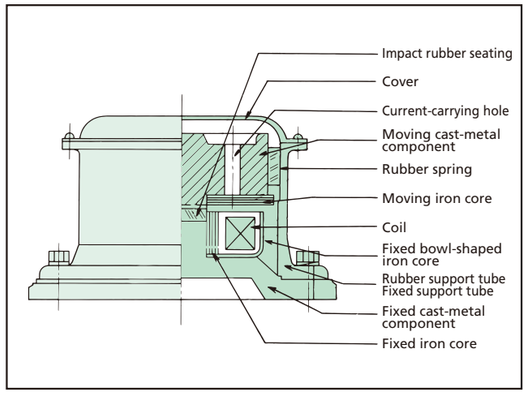
Note: 1. Standard color: Munsell 2.5G7/2.
2. Insulation class: B
3. Cable: VG-60/2PNCT, 2-core, 0.75mm^2(O.D.9.8mm), length0.35m.
VG-80/2PNCT, 2-core, 1.25mm^2(O.D.10.6mm), length0.35m.

Dimensions

Unit：mm



Structural Diagram



●Dimensions Table

Models	A	B	C	D	E	G
VG-60	205	185	260	160	14	20
VG-80	250	195	320	195	18	22

VP Series Vibratory Packers

Specifications

Models	Voltage (V)	Frequency (Hz)	Vibrations (VPM)	Maximum load capacity(kg)	Current(for200V) (A)	Rating	Standard table material	Weight (kg)	Controller
VP-4D	100	50	3000	4	0.6	Continuous	Wood	8	Onboard
	110	60	3600						
	200	50	3000						
	220	60	3600						
VP-15D	100	50	3000	10	1.4	Continuous	Wood	50	Onboard
	110	60	3600						
	200	50	3000						
	220	60	3600						
VP-30C *	200	50	3000	40	2.5	Continuous	Steel plate	40	C4-5B
	220	60	3600						
VGP-60 *	200	50	3000	80	1.8	Continuous	Steel plate	65	C4-5B
	220	60	3600						
VGP-80 *	200	50	3000	160	3.0	Continuous	Steel plate	110	C4-5B
	220	60	3600						

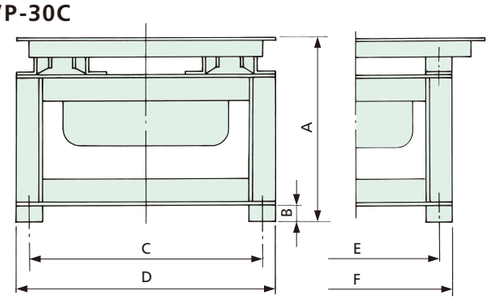
Note: 1. Standard color: Munsell 2.5G7/2 2. Items marked with an asterisk(*)are manufactured to order.

Dimensions

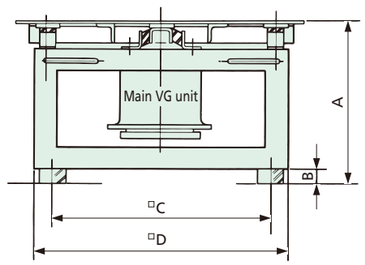
Unit：mm

VP-4D/15D

VP-30C



VGP-60/80



- Because packing operations are instantaneous, there's no need to fix the container to the top of the table. The container can be processed immediately after being filled.
- Of the standard packers, models VP-4D and VP-15D have built-in switches and controllers.
- Large-capacity packers have vibrating motors and are manufactured to order.

●Dimensions Table

Models	Table	A	B	C	D	E	F
VP-4D	254×178	147	19	180	220	90	133
VP-15D	508×356	225	16	420	460	276	310
VP-30C	400×400	280	25	360	400	260	300
VGP-60	500×500	320	25	370	450	—	—
VGP-80	600×600	350	25	470	550	—	—

Controller

Get the best type of vibration for specific applications and materials!

SINFONIA TECHNOLOGY CO., LTD. manufactures a wide range of controllers that help you get the most out of your vibrating feeders, linear feeders, vibrators, packers, and other electromagnetic equipment. In addition to our versatile C4-5B standard controller, we offer a fixed-amplitude controller that ensures a stable vibration amplitude (unaffected by changes in voltage or load), as well as the VF Series regulators that permit you to set optimum vibration conditions with the simple turn of a dial. Choose the one that best suits your needs—they're all compact and easy to operate.

Standard Controller

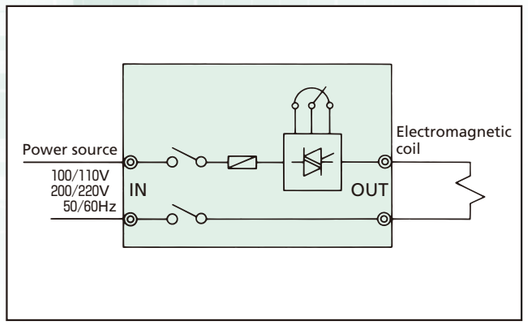
This versatile controller can be used with a wide variety of equipment. The front dial permits free adjustment of vibrations to ensure optimum performance for the application at hand.

Specifications

Model	C4-5B			
Power source	100/110V 200/220V 50/60Hz （shared）			
Output	DC5A（full wave and half wave）			
Weight	0.2kg			
Applicable equipment	Feeders	Vibrators	Packers	Previous controller models
	LF-02 LF-04	V-2B V-4C V-10A	——	C4-5B（full wave） AC side
	LF-30 LF-40 MF-04C MF-15C	V-20B V-30C VG-60 VG-80	VP-30C VGP-60 VGP-80	C4-5B（half wave） RC side

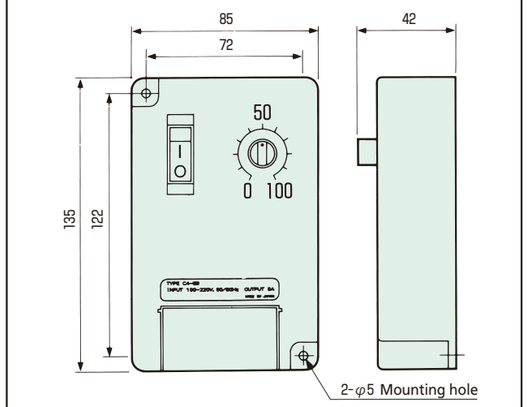
Note: 1. Standard color: Munsell 5Y7/1.
2. Plastic case is not fully enclosed; avoid the use in dusty areas. Install the controller at a dust-free area to avoid functional disorder.
3. Install the controller at a vibration-free area.

Schematic



Dimensions

Unit：mm



C10-1VF/1VCF Variable-frequency Digital Controller for Small Electromagnetic Vibrating Feeders

Digital control operation in 'Analog' way.

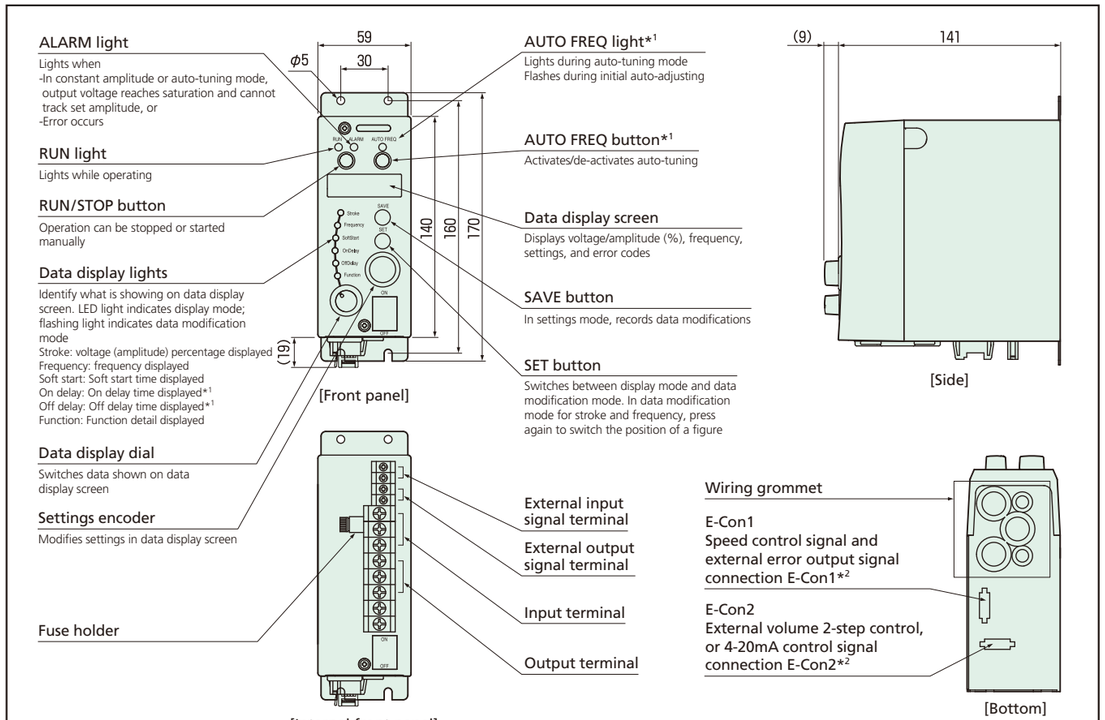
CE RoHS

Specifications

Models		C10-1VF	C10-1VCF	C10-3VF
Input power source		AC100/110±10%, 50/60Hz or AC200/220±10%, 50/60Hz		
Output	Control system	PWM system		
	Voltage	0–190V(for AC200V input)		
		0–95V(for AC100V input) Optional unit C10-TR allows output voltage in 0–190V range		
	Vibration frequency	Half wave:45–90Hz		
	Max.current	1A		3A
Operating modes	Constant voltage mode	Frequency, output voltage set manually		
Additional features	Speed selector	Selection of up to 4 amplitude setting by means of external signal *A connector is included for C10-1VCF		
	Start/stop control	Start/Stop control by external signal		
	Output signal	Output signal synchronized to parts feeder operation		
	Soft start	Start-up time 0.2– 4.0 sec		
Noise tolerant voltage		Above 1000V		
Ambient temperature		0– 40℃		
Ambient humidity		10–90%(no condensation)		
Gross weight		0.8kg		
Loss		15W(for AC200/220V input)		
Applicable feeder type		Small vibrating feeder CF series(CF-1,CF-2,CF-3)		CF-4
Option unit		Connectable to C10-TR		

Dimensions

Unit：mm

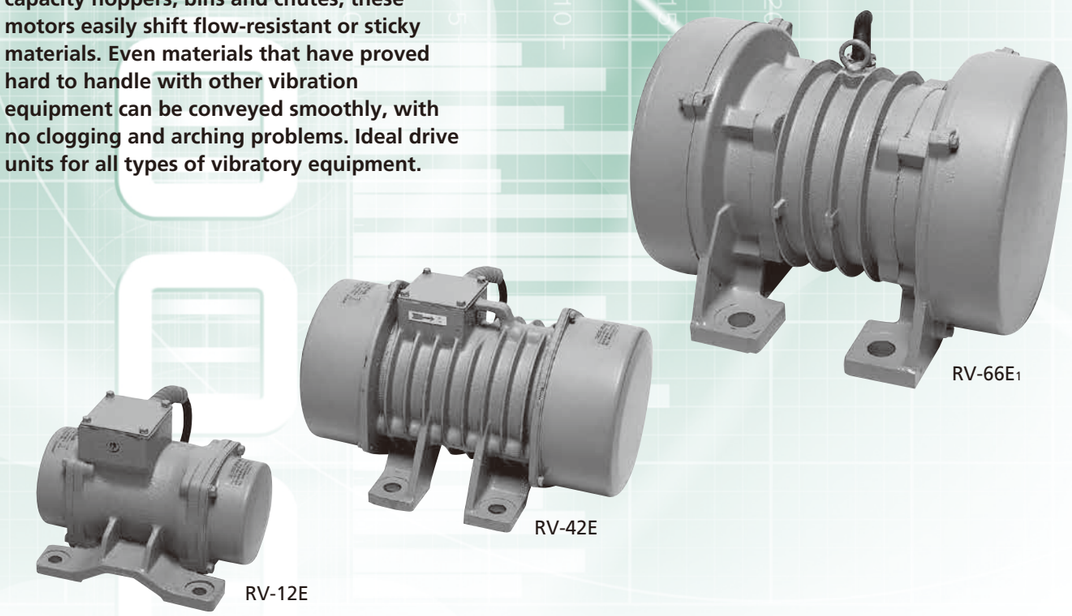

ALARM light
Lights when
-In constant amplitude or auto-tuning mode, output voltage reaches saturation and cannot track set amplitude, or
-Error occurs
RUN light
Lights while operating
RUN/STOP button
Operation can be stopped or started manually
Data display lights
Identify what is showing on data display screen. LED light indicates display mode; flashing light indicates data modification mode
Stroke: voltage (amplitude) percentage displayed
Frequency: frequency displayed
Soft start: Soft start time displayed
On delay: On delay time displayed*1
Off delay: Off delay time displayed*1
Function: Function detail displayed
Data display dial
Switches data shown on data display screen
Settings encoder
Modifies settings in data display screen
Fuse holder
59
30
φ5
140
160
170
(19)
AUTO FREQ light*1
Lights during auto-tuning mode
Flashes during initial auto-adjusting
AUTO FREQ button*1
Activates/de-activates auto-tuning
Data display screen
Displays voltage/amplitude (%), frequency, settings, and error codes
SAVE button
In settings mode, records data modifications
SET button
Switches between display mode and data modification mode. In data modification mode for stroke and frequency, press again to switch the position of a figure
[Front panel]
(9)
141
[Side]
External input signal terminal
External output signal terminal
Input terminal
Output terminal
[Internal front panel]
Wiring grommet
E-Con1
Speed control signal and external error output signal connection E-Con1*2
E-Con2
External volume 2-step control, or 4-20mA control signal connection E-Con2*2
[Bottom]

*1 These functions are not available on C10-1VF, 3VF, 5VF models (exclusive to VFEF models)
*2 C10-1VF/3VF is not connectable with E-con.

RV Series Vibrating Motors

Powerful vibration for flow-resistant materials

The RV series vibrating motors feature an unbalanced weight attached to the rotor shaft that generates an excitation force to produce powerful vibration. Designed for large-capacity hoppers, bins and chutes, these motors easily shift flow-resistant or sticky materials. Even materials that have proved hard to handle with other vibration equipment can be conveyed smoothly, with no clogging and arching problems. Ideal drive units for all types of vibratory equipment.



Features

Strong excitation force

The use of an unbalanced weight directly connected to the rotor shaft gives a very powerful excitation force per single revolution. Ideal for use with large-capacity hoppers, and materials that resist flow.

Compact and easy to install

The body is notably compact for a high output motor, and takes up very little space. It features straightforward 4-bolt fixture.

Adjustable excitation force

Excitation force is adjusted simply by modifying the angle of the unbalanced weight on the rotor shaft. Desired force can be set by loosening the bolt and realigning the adjustable weight on the graduated reference plane.

Low noise

Despite powerful performance, little noise is generated to disrupt the working environment.

Wide product line-up

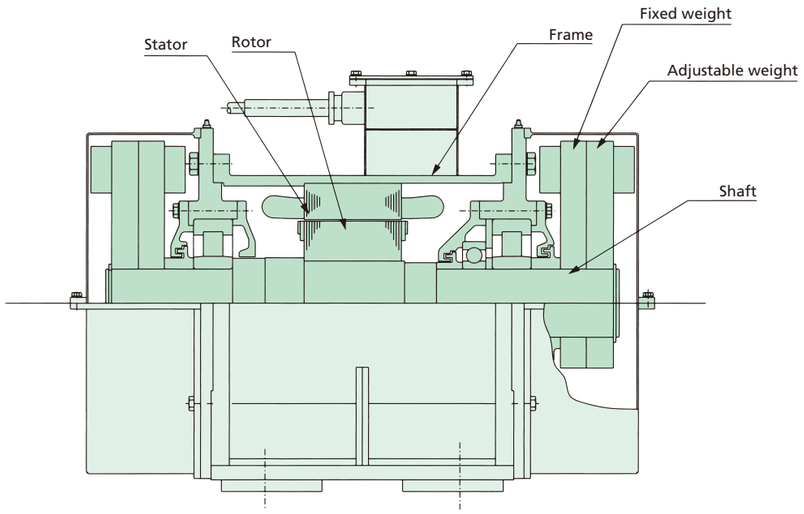
The RV series includes 2, 4, 6, and 8 pole motors, each with a series of models according to excitation force. This line-up assures the ideal match to suit the material and task. Additionally a reinforced pressuretight model is available for safe use in risky locations.

Ideal drive units for all types of vibratory equipment

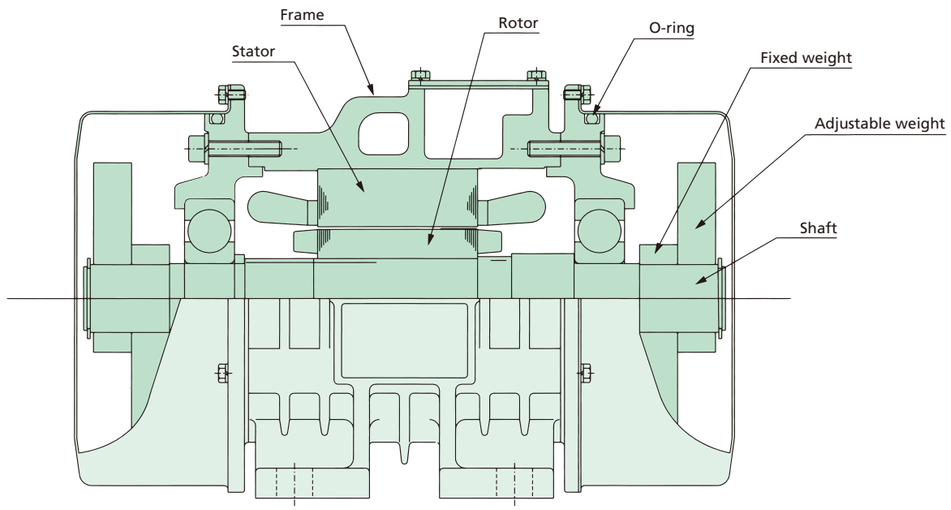
Broad range of applications as drive units for all types of vibrators, feeders, screens and conveyors.

Structural Diagram

B type (RV-758B12)



E type (RV-72E)

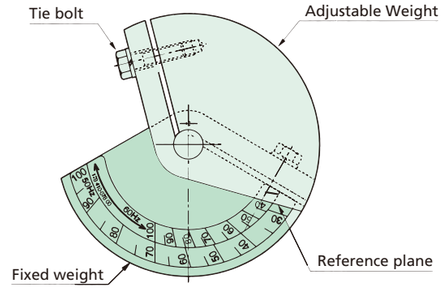


Adjusting Excitation Force

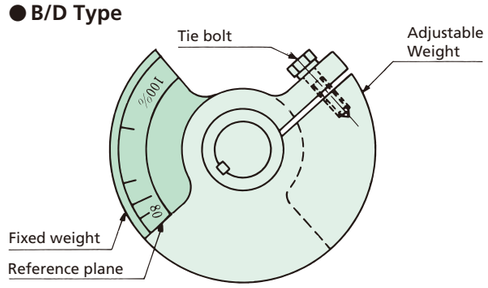
The excitation force can be adjusted simply by changing the angle at which the unbalanced weight is attached to the motor shaft. Just loosen the tie bolt and position the weight according to the graduated reference plane. Please make the appropriate adjustment before you begin operations.

Two-and four-poles Models

● D Type

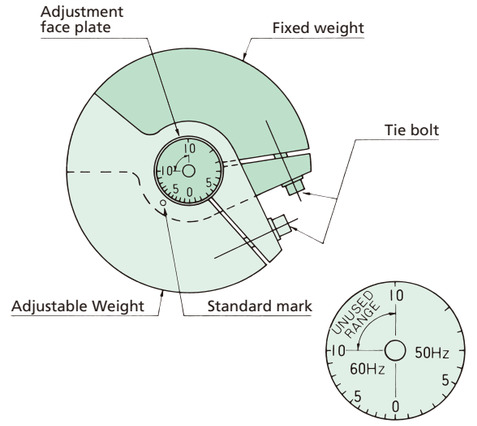


● B/D Type



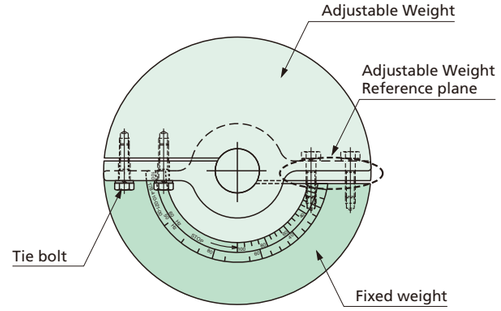
Note: Adjusting methods of excitation force depends on motor types. Please refer to operation manual for details.

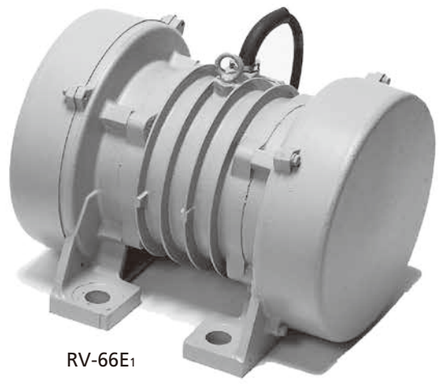
Six-poles Models



Eight-poles Models

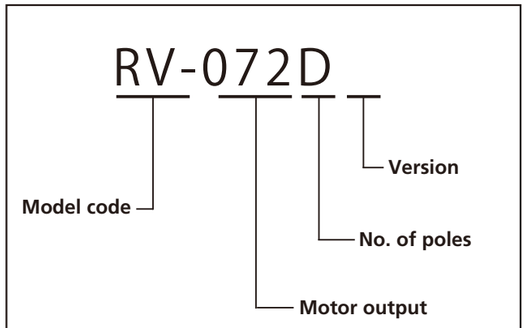
(78B3 and 158B13 are the same as four-pole models)





RV-66E1

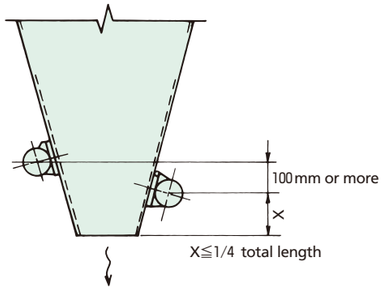
Model Indication



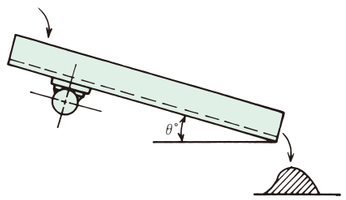
Examples of Motor Installation

① For standard hoppers, make sure the motor is installed near the chute's mouth, as shown in the diagram.
② When attaching two motors to a conical hopper, make sure the motors are offset by at least 100mm.
③ For chutes, make sure the motor is installed near the chute's mouth, as shown in the diagram.
④ Do not attach the motor directly to the hopper or chute. Instead, weld a base plate to the hopper or chute and bolt the motor to the base plate.
⑤ Make sure the motor's protective circuits, including the ground wire and thermal relay, are completely installed and operational.

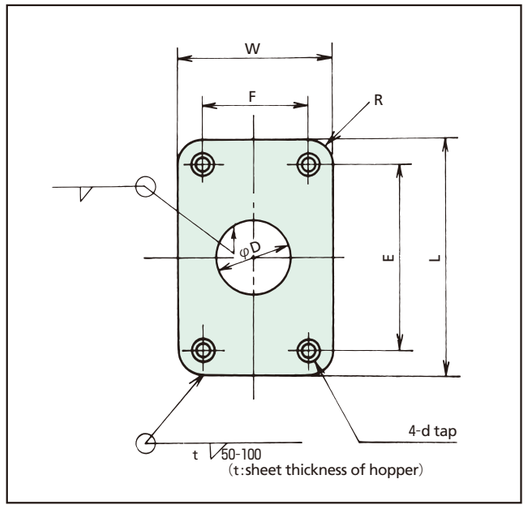
Hopper



Chute

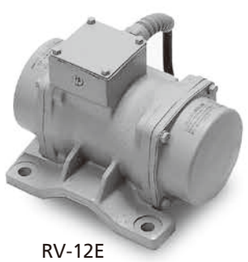


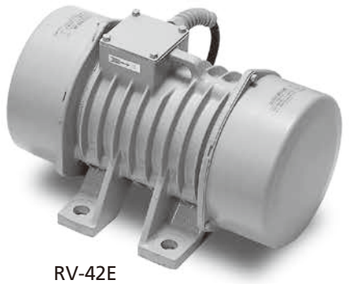
Outer Dimensions of Base Plate Unit：mm

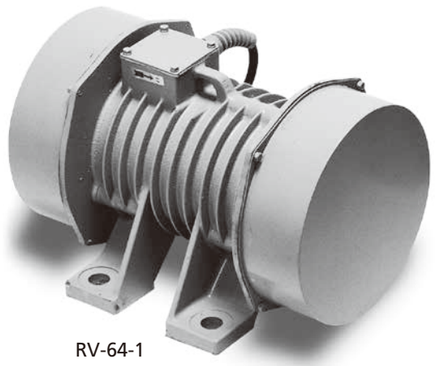


●Reference Chart for Base Dimensions

Models	Standard sheet thickness of hopper (t)	Outer thickness of base plate	Outer dimensions of base plate						
			W	L	F	E	D	R	d
RV-042	1.6	9	80	175	30	100	40	15	M6
RV-072D	1.6	12	120	220	40	120	40	20	M8
RV-12E	3.2	16	220	250	150	150	110	30	M12
RV-22D	4.5	16	200	250	90	150	80	35	M12
RV-42E	6	22	200	320	110	190	110	45	M16
RV-72E	9	25	200	320	110	180	110	45	M16
RV-064	3.2	12	150	200	80	120	60	30	M8
RV-14D1	4.5	16	160	250	80	150	90	35	M10
RV-24D1	6	22	180	280	100	160	100	40	M12
RV-44D1	9	25	200	320	110	180	110	45	M16
RV-64-1	9	25	250	350	140	220	120	50	M20
RV-74D1	12	32	250	400	125	240	140	55	M24
RV-154B3	19	40	400	450	190	310	190	65	M30


RV-12E


RV-42E


RV-64-1

Vibrating Motor Selection Graph (When Used as Feeders)

The graphs below will help you to select the most appropriate unit in both the 50Hz and 60Hz ranges based on the total weight of the feeder and the vibration amplitude that is required. Find the point where the lines representing the total weight of the feeder and the required vibration amplitude intersect. The slanted line immediately above and to the right of the intersection point represents the recommended model. For example, If your feeder operates at 60Hz, has a total feeder weight of 500kg, and requires a vibration amplitude of 3mm, the recommended model is RV-74D. The graph was calculated on the assumption that two vibrating motors are used.

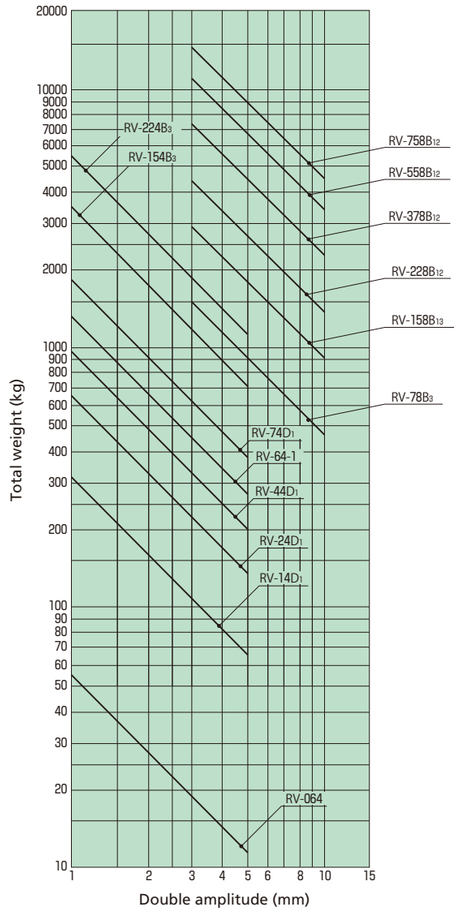
※Values shown are for 60Hz. When operating at 50Hz, it is possible to handle total weights up to 1.44 times the shown values.

If only one motor is used, the values given for the vibration amplitude should be reduced by half. Vibrating motors should always be operated within the amplitude limits (double amplitude) shown on the chart on the bottom.

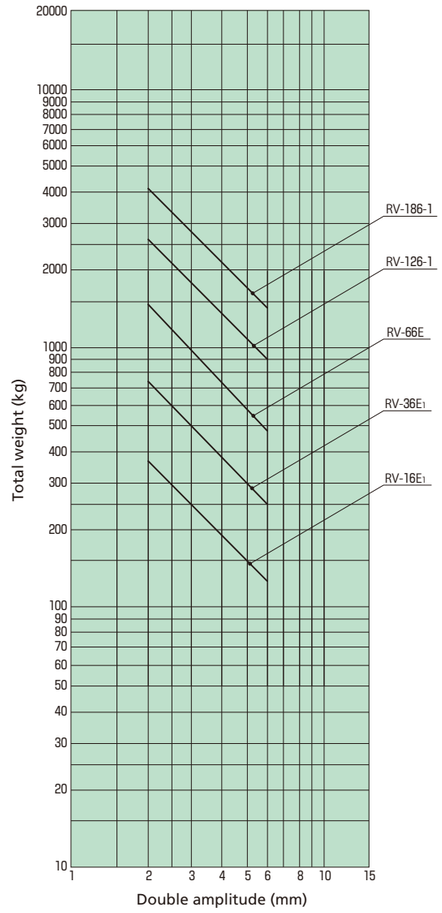
●Amplitude Limits (Double Amplitude) Unit：mm

	50Hz	60Hz
Four poles	4.5	3
Six poles	9	6
Eight poles	15	10

Four and eight-poles Models



Six poles Models

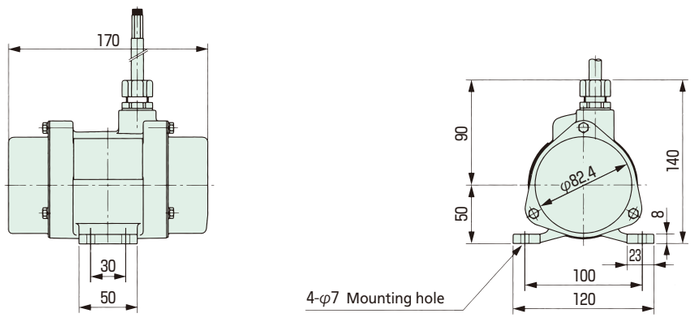


Note: Total weights include the weight of the motor.

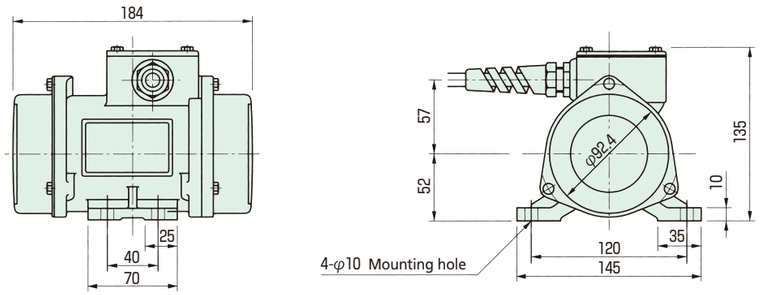
RV Series Vibrating Motors (Two Poles)

Unit：mm

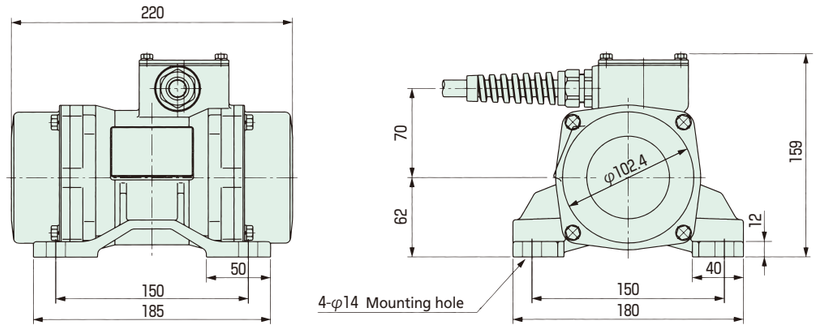
RV-042



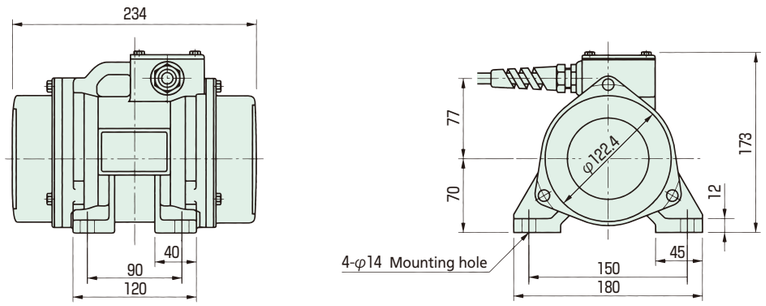
RV-072D



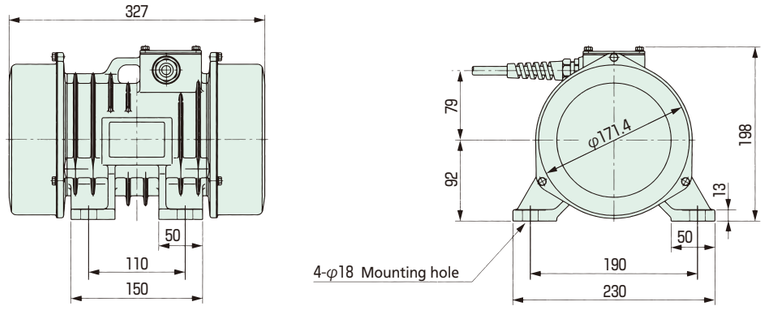
RV-12E



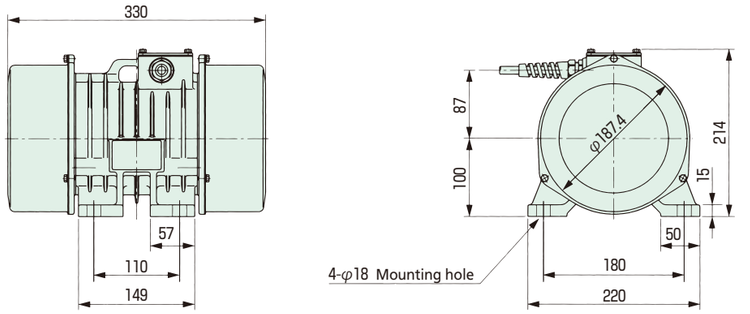
RV-22D



RV-42E



RV-72E



Specifications(Continuous rating, 3-phase, 200/220V, 400/440V, 50/60Hz)

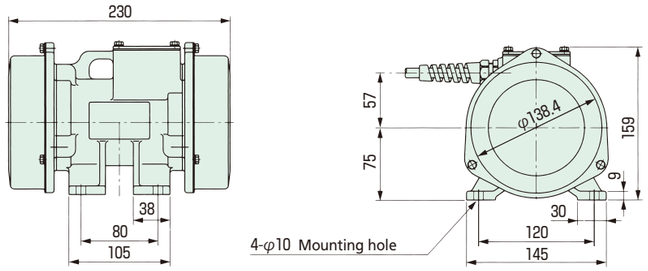
Models	Excitation force (kgf)	Output (kW)	Vibration(VPM)		Current (A)		Weight (kg)
			200V/50Hz	220V/60Hz	200V/50Hz	220V/60Hz	
RV-042	50	0.04	3000	3600	0.25	0.23	5.0
RV-072D	100	0.075	3000	3600	0.44	0.40	7
RV-12E	200	0.15	3000	3600	0.75	0.67	11
RV-22D	350	0.25	3000	3600	1.3	1.2	14
RV-42E	600	0.4	3000	3600	1.76	1.6	24
RV-72E	1000	0.75	3000	3600	3.52	3.2	33

Note: 1. Standard color : Munsell 2.5G7/2.
2. Insulation class : B
3. Special specification apply for outdoor operation.
4. The RV-042 is manufactured only to 200/220V specifications.
5. Cable : 2PNCT, 4-core, 0.75mm²(O.D.11mm), length 2m(green ground wire).

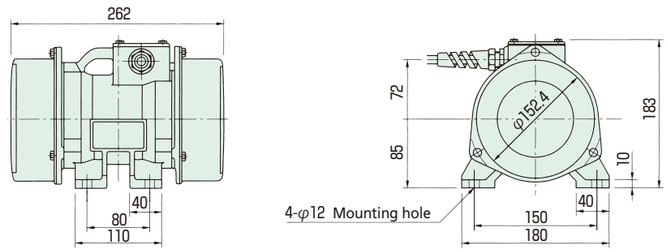
RV Series Vibrating Motors (Four Poles)

Unit：mm

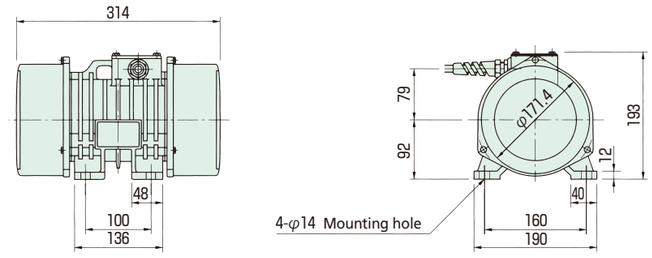
RV-064



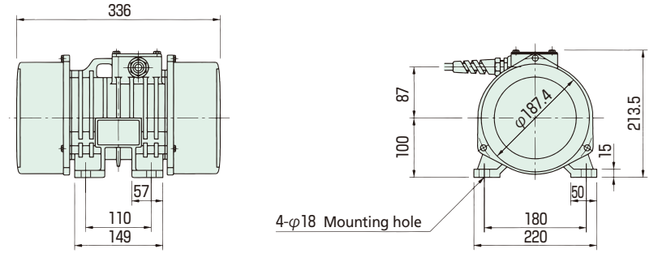
RV-14D1



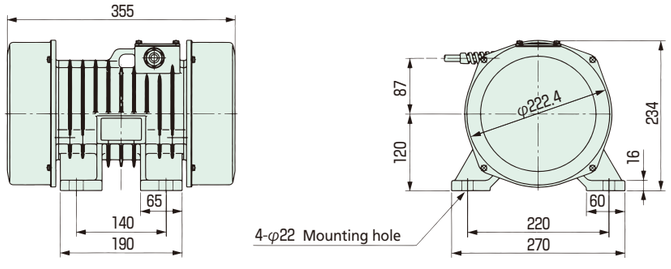
RV-24D1



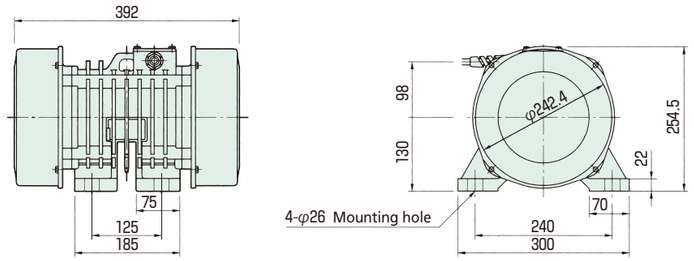
RV-44D1



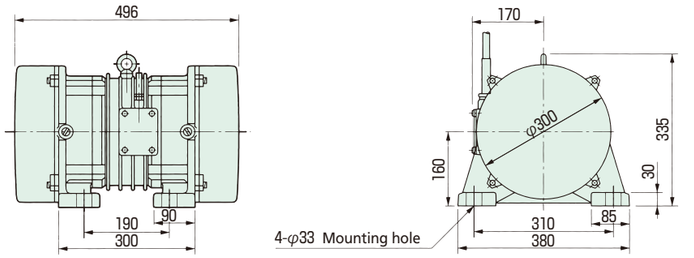
RV-64-1



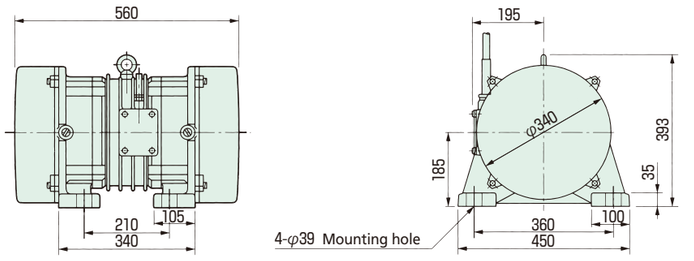
RV-74D1



RV-154B3



RV-224B3



Specifications(Continuous rating, 3-phase, 200/220V, 400/440V, 50/60Hz)

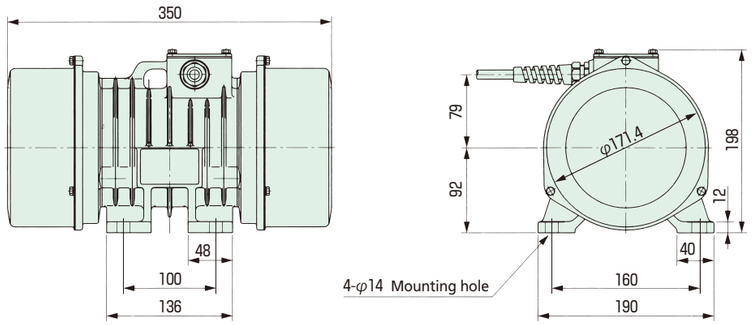
Models	Excitation force (kgf)	Output (kW)	Vibration(VPM)		Current (A)		Weight (kg)
			200V/50Hz	220V/60Hz	200V/50Hz	220V/60Hz	
RV-064	150	0.065	1500	1800	0.58	0.55	12
RV-14D1	300	0.12	1500	1800	0.84	0.74	18
RV-24D1	600	0.25	1500	1800	1.6	1.4	26.5
RV-44D1	900	0.4	1500	1800	2.1	1.9	36
RV-64-1	1200	0.6	1500	1800	3.06	2.75	45
RV-74D1	1700	0.75	1500	1800	3.6	3.2	66
RV-154B3	3200	1.5	1500	1800	6.6	6.0	130
RV-224B3	5000	2.2	1500	1800	9.6	8.8	180

Note: 1. Standard color : Munsell 2.5G7/2.
2. Insulation class : B
3. RV-064–74D1 are for outdoor operation.
4. RV-153B3, 224B3 are for indoor operation.
5. The RV-064 is manufactured only to 200/220V specifications.
6. RV-154B3, 224B3 are dual voltage, 200V or 400V.
7. Cable : RV-064–74D1 : 2PNCT, 4-core, 0.75mm²(O.D.11mm), length 2m(green ground wire).
RV-154B3 : 2PNCT, 4-core, 2.0mm²(O.D.12.5mm), length 2m(green ground wire).
RV-224B3 : 2PNCT, 4-core, 3.5mm²(O.D.14.5mm), length 2m(green ground wire).

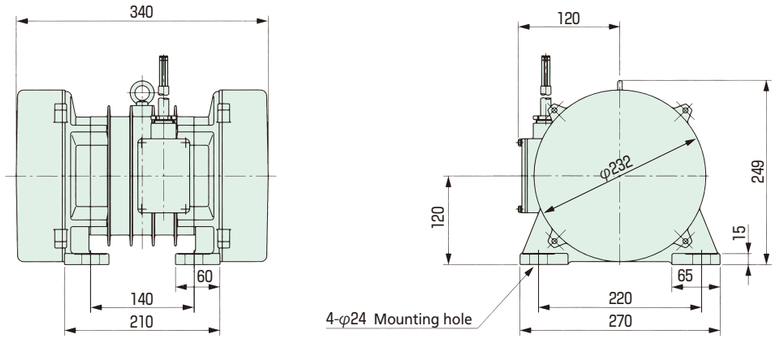
RV Series Vibrating Motors (Six Poles)

Unit : mm

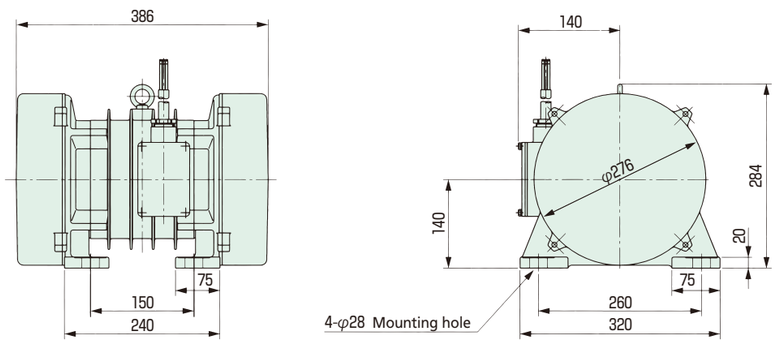
RV-16E1



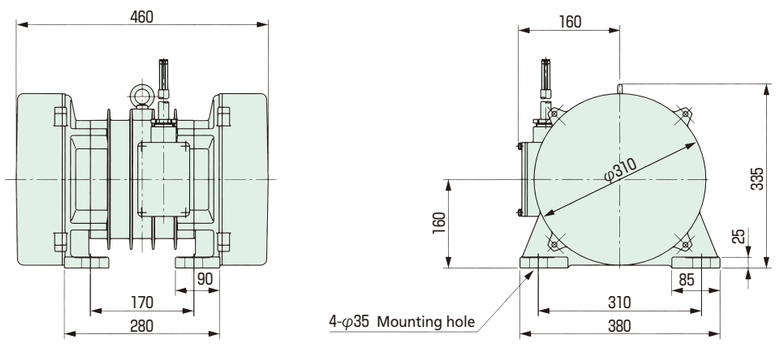
RV-36E1



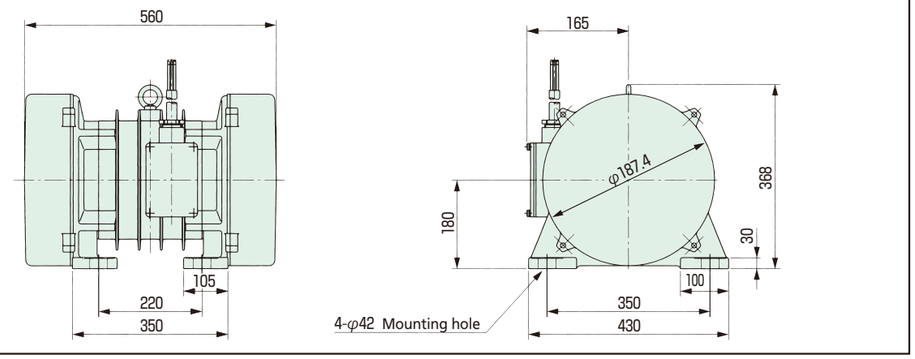
RV-66E1



RV-126-1



RV-186-1



Specifications(Continuous rating, 3-phase, 200/220V, 400/440V, 50/60Hz)

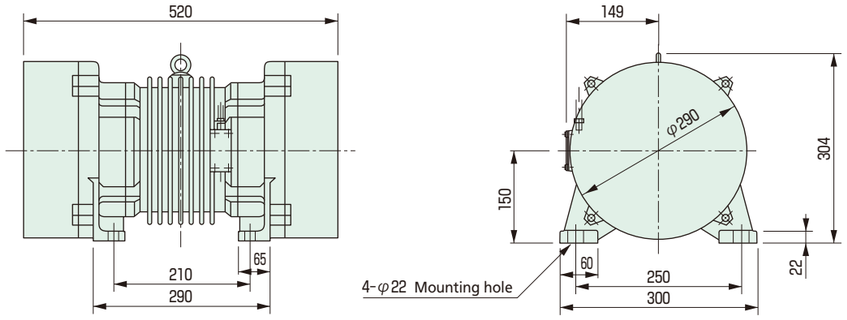
Models	Excitation force (kgf)	Output (kW)	Vibration(VPM)		Current (A)		Weight (kg)
			200V/50Hz	220V/60Hz	200V/50Hz	220V/60Hz	
RV-16E1	300	0.16	1000	1200	1.1	1.0	28.9
RV-36E1	600	0.32	1000	1200	2.14	1.94	42
RV-66E1	1200	0.6	1000	1200	4.1	3.68	68.2
RV-126-1	2200	1.2	1000	1200	7.2	6.4	116
RV-186-1	3400	1.8	1000	1200	10.0	9.0	166

Note: 1. Standard color : Munsell 2.5G7/2.
2. Insulation class : B
3. RV-16E1 is for outdoor operation.Others are for indoor operation.
4. RV-126-1,186-1 are dual voltage, 200V or 400V.
5. Cable : RV-16E1 : 2PNCT, 4-core, 0.75mm²(O.D.11mm), length 2m(green ground wire).
RV-36E1–RV-126-1 : 2PNCT, 4-core, 1.25mm²(O.D.11.5mm), length 2m(green ground wire).
RV-186-1 : 2PNCT, 4-core, 2.0mm²(O.D.12.5mm), length 2m(green ground wire).

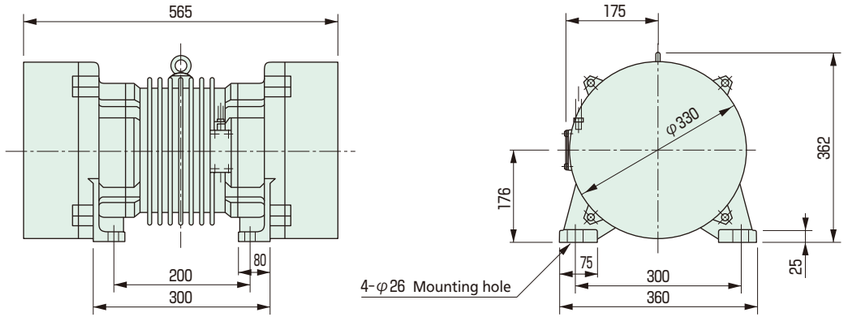
RV Series Vibrating Motors (Eight Poles)

Unit : mm

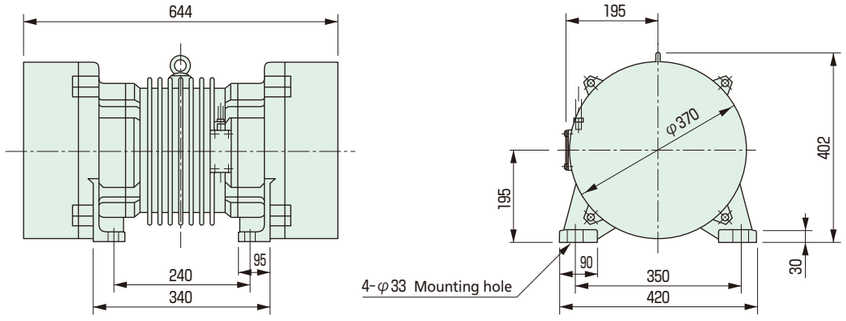
RV-78B3



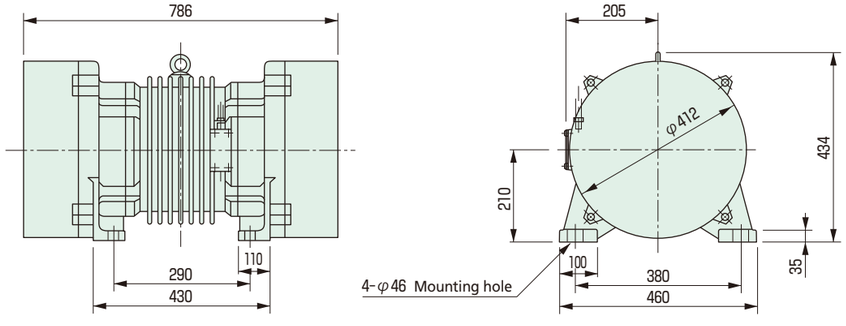
RV-158B13



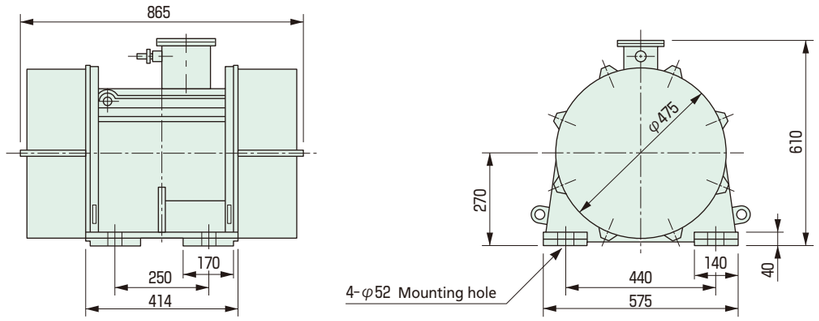
RV-228B12



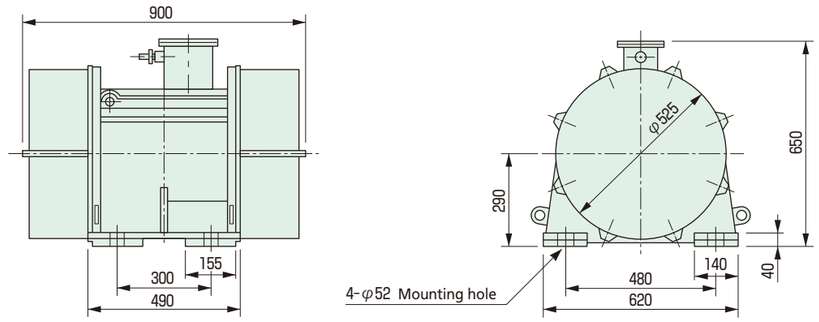
RV-378B12



RV-558B12



RV-758B12



Specifications(Continuous rating, 3-phase, 200/220V, 400/440V, 50/60Hz)

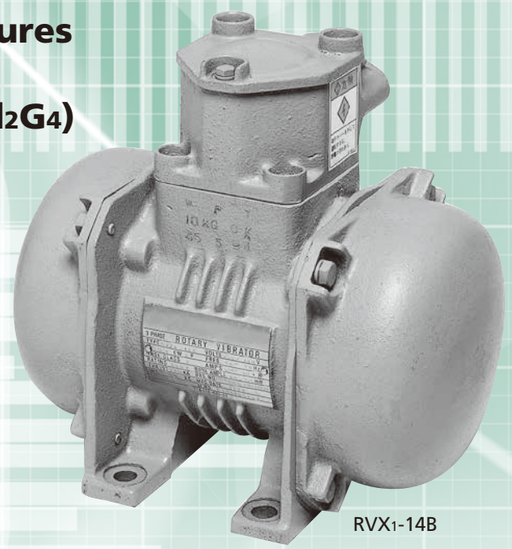
Models	Excitation force (kgf)	Output (kW)	Vibration(VPM)		Current (A)		Weight (kg)
			200V/50Hz	220V/60Hz	200V/50Hz	220V/60Hz	
RV-78B3	1000	0.75	750	900	4.4	4.0	104
RV-158B13	2000	1.5	750	900	9.0	8.0	160
RV-228B12	3000	2.2	750	900	8.0	7.4	260
RV-378B12	5000	3.7	750	900	13.8	12.6	320
RV-558B12	7500	5.5	750	900	15.0	14.0	520
RV-758B12	10000	7.5	750	900	21.0	19.0	650

Note: 1. Standard color : Munsell 2.5G7/2.
2. Insulation class : B(RV-78B3, RV-158B13) class : F(RV-228B12, RV-378B12, RV-558B12, RV-758B12)
3. Special specification apply for outdoor operation.
4. All models are dual voltage, 200V or 400V.
5. Cable : RV-78B3 : 2PNCT, 4-core, 1.25mm²(O.D.11.5mm), length 2m(green ground wire).
RV-158B13 : 2PNCT, 4-core, 2.0mm²(O.D.12.5mm), length 2m(green ground wire).
RV-228B12, 378B12 : 2PNCT, 4-core, 3.5mm²(O.D.15.8mm), length 3m(green ground wire).
RV-558B12, 758B12 : 2PNCT, 4-core, 5.5mm²(O.D.17.4mm), length 3m(green ground wire).

RVX1 Series Vibrating Motors

Explosion-proof design ensures safe performance in dangerous environments (d_2G_4)

The RVX1 Series vibrating motors feature a special explosion-proof design that makes them ideal for use in environments were explosive gases and other dangerous substances are present. Conforming to d_2G_4 requirements, the RVX1 motors can be used with confidence in Class 1 danger zones and in environments where gases with a G_4 ignition temperature are generated.



RVX1-14B

Features

Can be used in Class 1 danger zones

The RVX1 Series vibration motors can be used in Class 1 danger zones because of their (d)-type explosion-proof construction, which ensures that the unit remains intact even if explosive gas seeps inside and ignites. Class 1 danger zones are zones in which explosive gases can potentially collect in hazardous densities under normal conditions, or in which repairs, maintenance work, or leaks frequently result in the potential for such gases to collect in hazardous densities.

Can be used in environments where gases with a G_4 ignition temperature are present

The RVX1 Series motors can be used with confidence in environments where gases with a G_4 ignition temperature (135℃-200℃) are generated. There are five categories of ignition temperature: G_1,G_2,G_3,G_4, and G_5. The higher the G number, the lower the temperature required to ignite the gas. The G_4 categoryincludes such gases as acetaldehyde and ethyl ether.

Approved as a d_2G_4 product

RVX1 motors meet or surpasses all requirements for approval as a d_2G_4 product in accordance with the Guidelines for Explosion-proof Industrial Electrical Equipment as formulated by the National Institute of Industrial Safety.

Note: d_2G_4 is a Japanese explosion proof standard, and the products comply with this standard have the mechanical structure equivalent to ExdIIBT4, IEC explosion-proof standards. In case that explosion-proof approval for this products is required outside Japan, it is required to pass the explosion-proof verification in that country.
※Please note that these products have not been examined under IEC Ex scheme.

Explosion-proof Specifications

- ●Type of explosion-proof construction: (d)
- ●Explosion grade and ignition temperature: 2, G_4
- ●Danger zones in which it can be used:Classes 1 and 2
- ●Protection required for cables? Yes
- ●Relay terminal box required? Yes
- ●Length of special vibration-proof cable connecting the motor to the relay terminal box: 1,000mm
- ●Method of bringing in a lead wire from outside the terminal box: pressure packing (also possible to use screw-coupled conduit tubes)
- ●Connection method used for cables inside the terminal box: pressure studs
- ●Construction of main motor unit: motor, special vibration-proof cable, relay terminal box (with onboard leak breaker)

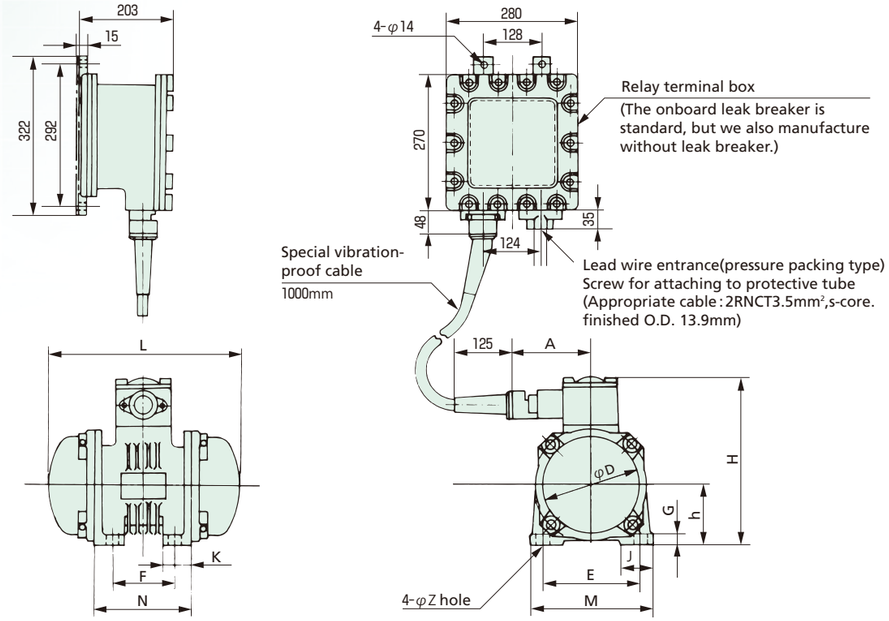
Note: The special vibration-proof cable prevents vibration-induced short circuits and is therefore a recommended part of a set that also includes the motor itself and the terminal box.

Specifications

Models	Excitation force (kgf)	Voltage (V)	Frequency (Hz)	Output (kW)	Vibrations (VPM)	Rating	Mounting bolt	Weight (kg)
RVX1-14B	250	200/220 400/440	50/60	0.1	1500/1800	Continuous	M12	24
RVX1-24B	500	200/220 400/440	50/60	0.2	1500/1800	Continuous	M16	33
RVX1-44B	800	200/220 400/440	50/60	0.4	1500/1800	Continuous	M20	53
RVX1-74B	1600	200/220 400/440	50/60	0.75	1500/1800	Continuous	M24	92
RVX1-78B	1000	200/220 400/440	50/60	0.75	750/900	Continuous	M20	112
RVX1-154B	3200	200/220 400/440	50/60	1.5	1500/1800	Continuous	M30	156
RVX1-158B	2000	200/220 400/440	50/60	1.5	750/900	Continuous	M24	206

Dimensions

Unit：mm



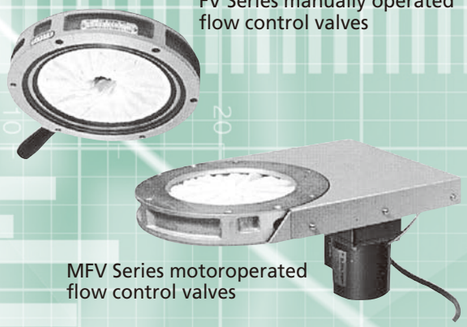
●Dimensions Table

Models	A	D	L	E	F	G	H	J	K	M	N	Z	h
RVX1-14B	127	162	280	160	90	12	256	40	36	190	132	14	90
RVX1-24B	127	187	330	180	100	15	276	50	46	220	152	18	100
RVX1-44B	150	215	386	210	110	18	337	60	56	260	172	22	120
RVX1-74B	150	256	440	260	140	25	372	70	70	320	220	26	140
RVX1-78B	150	294	560	250	210	22	387	60	60	300	280	22	150
RVX1-154B	150	310	556	310	190	30	417	85	90	380	300	33	160
RVX1-158B	150	344	634	300	200	25	437	75	80	360	300	26	175

Flow Control Valves

Enjoy complete and precise flow control!

The FV and MFV Series control valves attach to the discharge openings of bins, hoppers or chutes to control the amount of material flowing through. Featuring a sleeve that opens and closes in a concentric circle like a camera aperture, these unique valves are perfect for distributing, mixing, sampling, bagging, and otherwise processing ultra-fine powders. The FV valves open and close manually with an easy-to-operate handle, while the MFV valves come equipped with a motor that will adjust the aperture with the flick of a switch. Both the FV and MFV valves are available in aluminum or stainless steel to suit the application.

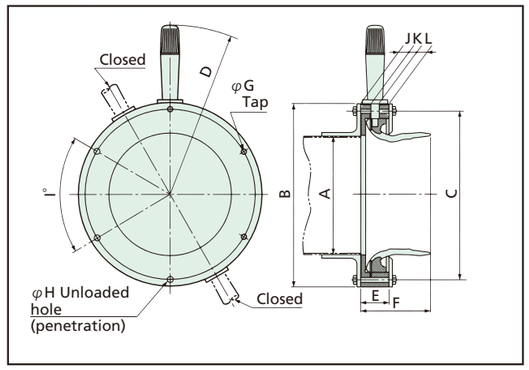


FV Series manually operated flow control valves

MFV Series motoroperated flow control valves

FV Series Manually Operated Flow Control Valve

Dimensions Unit：mm



●Structure and Materials of Main Components

Component	A Type (Aluminum)	S Type (Stainless)
Housing	Aluminium	Stainless
Control ring	Brass	Stainless
Holding rings (large and small)	Stainless	Stainless
Spiral stops (large and small)	Stainless	Stainless
Spacer	Stainless	Stainless
Stud bolts	Carbon steel	Stainless
Handle	Resin	Stainless
Sleeve	Acrylic-coated nylon taffeta	

●Dimensions Table

Models	A	B	C	D	E	F	G	H	I	J	K	L	Weight(kg) Type A	Weight(kg) Type S
FV-4A (S)	100	155	140	162	32	60	3-M6	3-φ7	60°	11	10	11	1.2	2.2
FV-6A (S)	150	230	214	214.5	35	90	3-M8	3-φ9	60°	11	12	12	2.5	4.4
FV-8A (S)	204	283	267	241	35	115	3-M8	3-φ9	60°	11	12	12	3.5	5.5
FV-10A (S)	254	345	325	272	42	146	4-M10	4-φ11	45°	15	12	15	5.0	9
FV-12A (S)	305	410	390	304.5	45	172	4-M10	4-φ11	45°	16.5	12	16.5	8.0	13

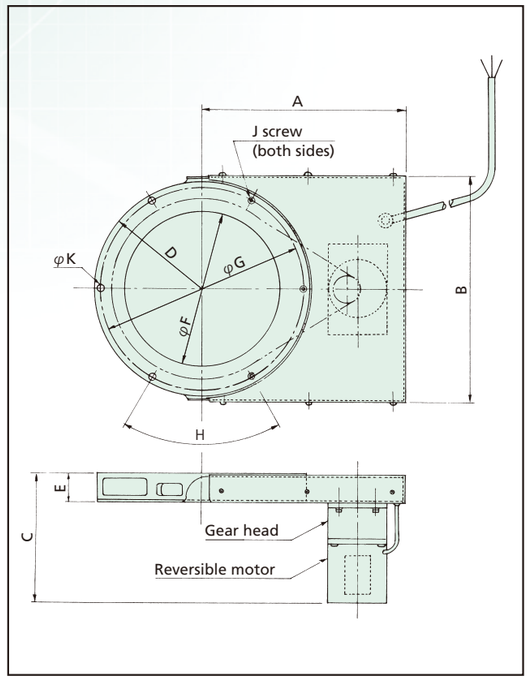
Note: 1. The "A" and "S" at the end of the model numbers indicate aluminum and stainless steel, respectively.
2. The pressure exerted on the valve by the powdered material must be 0.014 MPa or less.

MFV Series Motor-operated Flow Control Valve

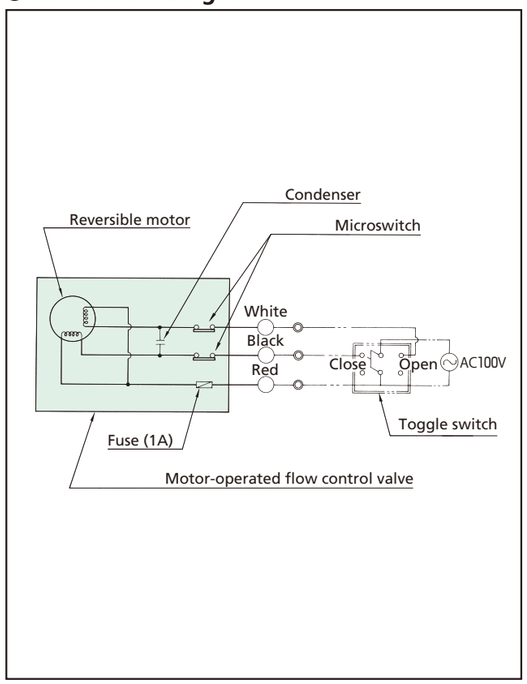
Specifications

Models	Power source	Reverseble motor Output (W)	Reverseble motor Current (A)	Gear head	Opening/closing time (sec) 50Hz	Opening/closing time (sec) 60Hz	Weight (kg)	Cable
MFV-4A1	100V 50/60Hz	25	0.6	Speed reduction ratio 1：30	2.4	2.0	3.2	VCT3-core 0.75mm²×1m
MFV-6A1		25	0.6		3.8	3.2	7.6	
MFV-8A1		25	0.6		4.8	4.0	8.6	
MFV-10A1		40	0.9		6.0	5.0	14	
MFV-12A1		40	0.9		7.2	6.0	18	

Dimensions Unit：mm



●Connection Diagram



●Dimensions Table

Models	A	B	C	D	E	F	G	H	J	K
MFV-4A1	221.6	183.2	167.6	80	35.2	100	145	60	3-M6	3-φ7
MFV-6A1	251.6	245.2	170.6	115	38.2	150	214	60	3-M8	3-φ9
MFV-8A1	276.6	298.2	170.6	141.5	38.2	204	267	60	3-M8	3-φ9
MFV-10A1	316.6	368.2	216.6	172.5	46.5	254	325	45	4-M10	4-φ11
MFV-12A1	351.6	433.2	219.6	205	49.5	305	390	45	4-M10	4-φ11

Note: 1. The main body is made of alminum. A stainless steel body is also available by special order.
2. The standard color for all stainless steel parts except the motor itself is Munsell 2.5G7/2.

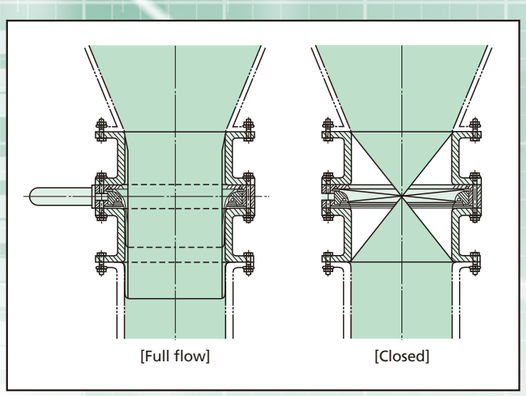
Adaptor Sleeve/Adaptor Spool

Eliminating material adhesion and stacking

Use these adaptors to eliminate adhesion of high-abrasive material to sleeve and stacking of fine grain materials, which causes faulty valve operation.
The adaptors are also useful for controlling flow of melting materials, liquid, and air.

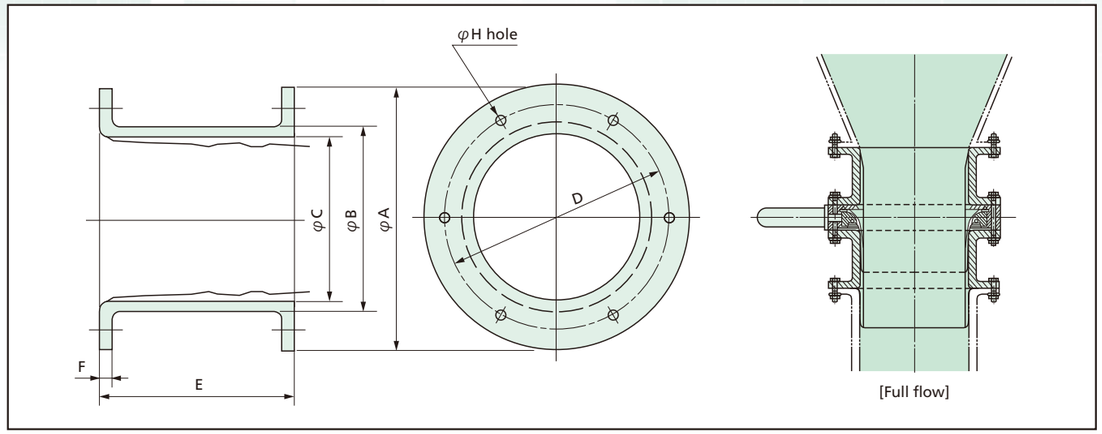
Installation

Attach a spool to hopper flange and flow-control valve by bolts. To insert a valve in the middle of chute or duct, two spools and one adaptor sleeve are required. To install a valve at the exit of hopper or chute, one spool and one sleeve are required.
example of using adaptor spools and adaptor sleeve with manual valve in the middle of chute.



Dimensions (Same for models FV and MFV)

Unit : mm



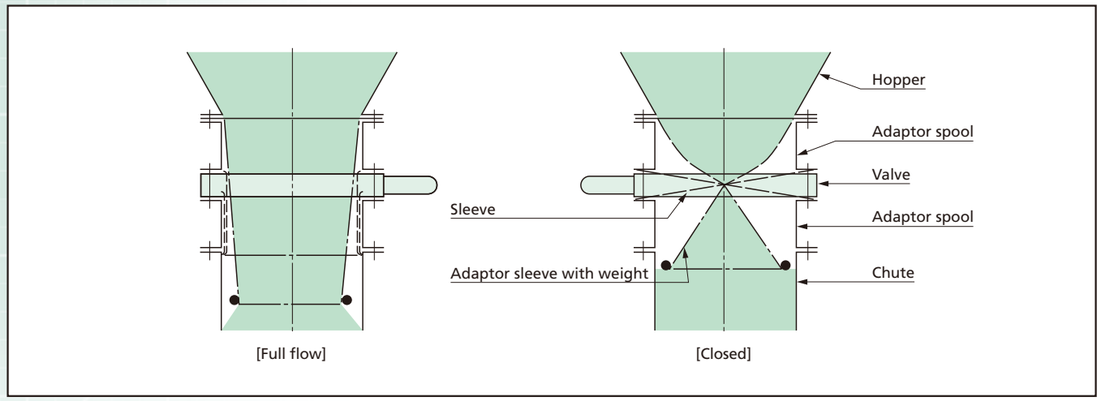
●Dimensions Table

Model Applicable float Control valve	A	B		C	D	E	F		H	Hole number	Weight (kg)	
		Type A	Type S				Type A	Type S			Type A	Type S
FV/MFV-4A (S)	155*	115	101	95	140*	76	9	6	7	6	1.2	2.2
FV/MFV-6A (S)	230	166	152	146	214	76	9	6	9	6	2.5	4.4
FV/MFV-8A (S)	283	217	205	197	267	76	9	6	9	6	3.5	5.5
FV/MFV-10A (S)	345	262	250	242	325	127	9	6	11	8	5	9
FV/MFV-12A (S)	410	312	300	292	390	127	9	6	11	8	8	13

Note: 1. Type A: Aluminum Type S: Stainless steel
4A(S): A=160, D=14
3. Customers are requested to create a spool with above specifications.

Measure to create smooth flow of materials of extremely low-downward pressure on flow control valve

Use a special adaptor sleeve (with ring weight in its bottom) to control smooth opening of sleeve, when handling materials of extremely low-downward pressure, which often underperform sleeve opening.



Measure to decrease pressure on flow control valve

Try to reduce material pressure as low as possible, in order to ensure smooth operation of flow control valve.
The practice also extends sleeve life.

We calculate standard material pressure on sleeve at 140g/cm^2.
measures to reduce pressure.

Figure A

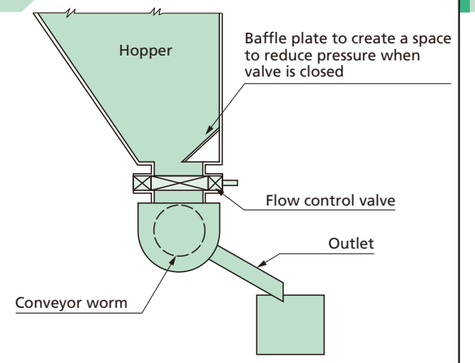


Figure B

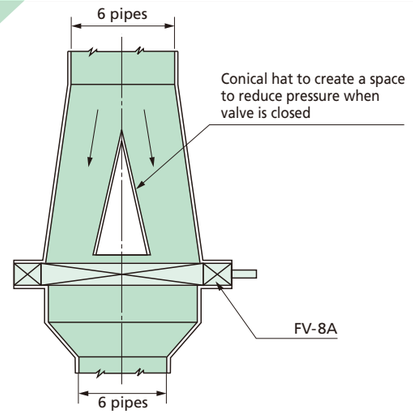


Figure C

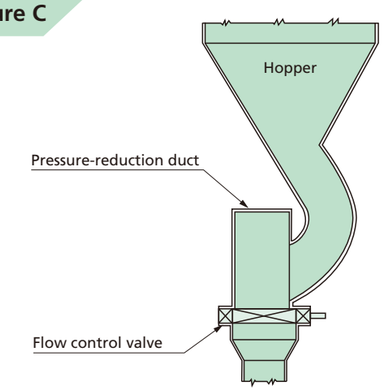


Figure D